

WO 01/16172

PCT/AU00/01048

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SEQUENCE LISTING

<110> The University of Melbourne
Commonwealth Scientific and Industrial Research Organisation

<120> Vaccine antigens of Moraxella

<160> 9

<170> PatentIn Ver. 2.1

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<211> 1114

<212> PRT

<213> Moraxella bovis

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35 40 45

Lys Tyr Ser Phe Tyr Asp Tyr Tyr Leu Asp Phe Leu Lys Arg Phe Arg
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Pro Thr Pro Thr Pro Val Pro Ser Pro Val Arg Pro Ala Pro Glu Leu
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Val Arg Pro Thr Pro Ala Pro Ile Pro Ala Pro Thr Pro Val Pro Thr
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Pro Ala Pro Ile Ser Gly Gly Ile Ser Gly Ser Tyr Ile Ala Pro Val
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Ser Pro Ser Glu Val Arg Gln Pro Asp Tyr Thr Arg Arg Val Gln Ala
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Asn Leu Lys Arg Asn Gln Pro Ala Pro Ser Ala Gly Thr Arg Thr Gly
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Tyr Ser Val Met Asp Thr Ser Asn Asn Ser Asn Leu Thr Ser Lys Phe
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Tyr Gly Thr Thr Glu Asp Gly Tyr Ala Glu Arg Leu Asp Asn Leu Lys
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Asn Thr Ile Asp Thr Arg Gln Ala Lys Val Gly Val Ile Asp Thr Gly
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Ile Asn Arg Phe Asn Arg Asp Leu Val Gly Ala Asn Val His Asp Thr
195 200 205

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Gln Ile Glu Cys Val Ser Ala Gly Arg Ser Thr Cys Tyr Thr Pro Glu
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 Tyr Asp Ala Gln Arg Leu Asn Tyr Asn Pro Thr Thr Gly Gln Ile Asn
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Ala Arg Lys Asp Gly Thr Leu Gly Asn Thr Leu Gln Pro Ser Phe Thr
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Thr Asn Pro Asp Pro Val Trp Ser Ser Leu Phe Ala Gln Ser Tyr Gly
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Lys Thr Ala Ser Ala Asn Thr Pro Tyr Asn Pro Thr Gly Thr Asn Tyr
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Ala Val Gly Gly Ala Arg Ser Gly Ser Glu Val Asn Trp Asn Gly Phe
100 105 110

Val Asn Val Pro Ser Thr Lys Thr Gln Ile Thr Asp His Leu Thr Ala
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Gln Asn Ala Ile Lys Gly Ala Val Thr Arg Thr Val Ile Asp Ile Glu
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Thr Leu Asn Gln Ala Gly Ala Thr Thr Ile Leu Val Pro Asn Val Pro
 180 185 190

Asp Leu Ser Leu Thr Pro Arg Ala Ile Tyr Gly Glu Ser Leu Met Ala
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Gly Val Gln Asp Lys Ala Lys Leu Ala Ser Ser Leu Tyr Asn Ser Gly
 210 215 220

Leu Phe Glu Ala Leu Asn Gln Ser Thr Ala Asn Ile Ile Pro Ala Asn
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Thr Phe Ala Leu Leu Gln Glu Ala Thr Thr Asn Lys Glu Ala Phe Gly
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Phe Lys Asn Thr Gln Gly Val Ala Cys Gln Met Pro Ala Arg Thr Thr
 260 265 270

Gly Ala Asp Asp Val Ala Ser Thr Ser Leu Ala Cys Thr Lys Ala Asn
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Leu Ile Glu Asn Gly Ala Asn Asp Thr Tyr Ala Phe Ala Asp Asp Ile
 290 295 300

His Pro Ser Gly Arg Thr His Arg Ile Leu Ala Gln Tyr Tyr Arg Ser
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Ile Met Asp Ala Pro Thr His Met Gly Lys Leu Ser Gly Glu Leu Val
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Lys Thr Gly Ser Ala His Asp Arg His Val Tyr Arg Gln Leu Asp Arg
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Leu Ser Gly Ser Gln His Ser Ile Trp Ala Asn Val His Ala Ser Asp
 355 360 365

Arg Thr Asp Pro Thr Thr Gln Ile Gly Leu Asp Val Ala Gly Ser Ser
 370 375 380

Ser His Thr Gly Ala Tyr Leu Ser His Gln Asn Gln Asp Tyr Val Leu
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Asp Asp Thr Leu Ser Ser Asp Val Lys Thr Ile Gly Met Gly Leu Tyr
 405 410 415

His Arg His Asp Ile Gly Asn Val Arg Leu Lys Gly Val Ala Gly Ile
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Asp Arg Leu Ser Val Asp Thr His Arg His Ile Asp Trp Glu Gly Ala
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Asp Glu Leu Gly Ile Ala Arg Leu Ala Glu Glu Pro Asn His Thr Glu
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 675 680 685
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Val Leu Asn Gly Gly Ala Gly Asn Asp Val Tyr Ile Phe Arg Lys Gly
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Asp Gly Asn Asp Thr Leu Tyr Asp Gly Thr Gly Asn Asp Lys Leu Ala
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Phe Ala Asp Ala Asn Ile Ser Asp Ile Met Ile Glu Arg Thr Lys Glu
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Gly Ile Ile Val Lys Arg Asn Asp His Ser Gly Ser Ile Asn Ile Pro
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Arg Trp Tyr Ile Thr Ser Asn Leu Gln Asn Tyr Gln Ser Asn Lys Thr
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Ser Asp Gln Ile Asp Lys Ile Leu Gln Asp Lys Lys Asp Gly Thr Val
850 855 860

Ile Thr Ser Gln Glu Leu Lys Lys Leu Ala Asp Glu Asn Lys Ser Gln
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885 890 895

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 35 40 45

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